

ABSTRACT

A broadband optical via provides a low loss interconnection between waveguides in two vertically adjacent planar waveguiding layers. Two waveguides, one in each planar layer, evanescently interact over an interaction length, and substantially all of the power on one waveguide is transferred to the second waveguide. The relative detuning between waveguides is varied along the interaction region by tapering the width of one or both guides along the direction of propagation. The interaction strength is also varied by varying the physical separation between the two waveguides such that the interaction approaches zero near the two ends of the interaction length. The performance of the broadband optical via is fabrication tolerant, polarization tolerant, wavelength tolerant, and dimensionally tolerant.